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of Data onto a Grid Pattern; 3.8 Discussion; 4 Static Problems; 4.1 Force Identification Problems; 4.2 Whole-Field Displacement Data; 4.3 Strain Gages; 4.4 Traction Distributions
4.5 Nonlinear Data Relations 4.6 Parameter Identification Problems; 4.7 Choosing the Parameterization; 4.8 Discussion; 5 Transient Problems with Time Data; 5.1 The Essential Difficulty; 5.2 Deconvolution using Sensitivity Responses; 5.3 Experimental Studies; 5.4 Scalability Issues: Recursive Formulation; 5.5 The One-Sided Hopkinson Bar; 5.6 Identifying Localized Stiffness and Mass; 5.7 Implicit Parameter Identification; 5.8 Force Location Problems; 5.9 Discussion; 6 Transient Problems with Space Data; 6.1 Space-Time Deconvolution; 6.2 Preliminary Metrics; 6.3 Traction Distributions
6.4 Dynamic Photoelasticity 6.5 Identification Problems; 6.6 Force Location for a Shell Segment; 6.7 Discussion; 7 Nonlinear Problems; 7.1 Static Inverse Method; 7.2 Nonlinear Structural Dynamics; 7.3 Nonlinear Elastic Behavior; 7.4 Elastic-Plastic Materials; 7.5 Nonlinear Parameter Identification; 7.6 Dynamics of Cracks; 7.7 Highly Instrumented Structures; 7.8 Discussion; Afterword; References; Index

Sommario/riassunto

All structures suffer from stresses and strains caused by factors such as wind loading and vibrations. Stress analysis and measurement is an integral part of the design and management of structures, and is used in a wide range of engineering areas. There are two main types of stress analyses - the first is conceptual where the structure does not yet exist and the analyst has more freedom to define geometry, materials, loads etc - generally such analysis is undertaken using numerical methods such as the finite element method. The second is where the structure (or a prototype) exists, and so s